Optical Ethylene Sensor for Plant Health, Phase I

Completed Technology Project (2006 - 2006)

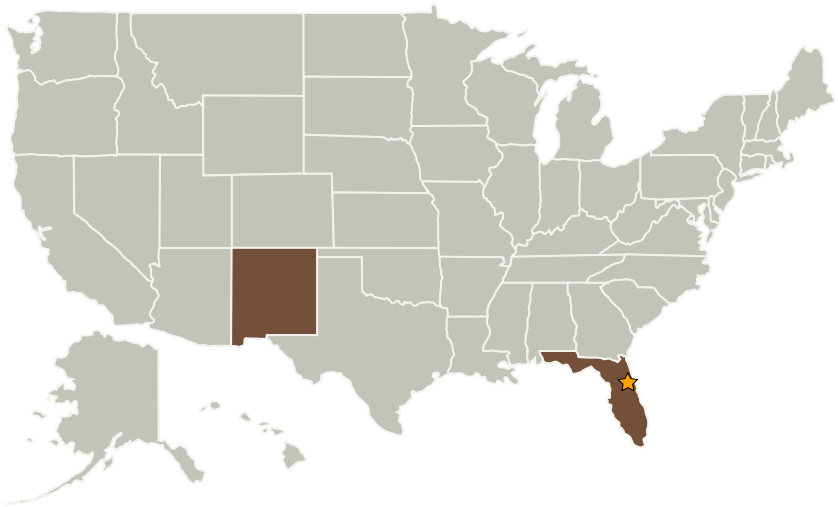
Project Introduction

Future long-duration manned space flights will rely upon onboard production facilities to grow and produce food throughout the mission. Because the lives of the mission participants will depend upon successful agricultural and horticultural practices, it is imperative to provide them with sophisticated diagnostic tools with which to assure success. Continuous real-time monitoring of gaseous species in the ambient environment is required. There are several gases vital to this application including ethylene, oxygen, and carbon dioxide. Vista Photonics proposes to develop a rugged, real-time, 15 parts-per-billion (ppb) gaseous ethylene analyzer, ultimately compatible with space flight. The sensor technology developed on this project will be further capable of high-performance detection of additional trace gases including moisture and plant respiratory oxygen and carbon dioxide.

Anticipated Benefits

Potential NASA Commercial Applications: Contaminant monitoring in process gas streams in the chemical and microelectronics industries. Medical diagnosis through detection of biogenic gases in human breath that correlate to specific pathologies. Environmental monitoring and regulatory compliance in agriculture, power production, and occupational safety.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Kennedy Space Center (KSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Kennedy Space Center(KSC)	Lead Organization	NASA Center	Kennedy Space Center, Florida
Vista Photonics, Inc.	Supporting Organization	Industry	Santa Fe, New Mexico

Primary U.S. Work Locations	
Florida	New Mexico

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Jeffrey S Pilgrim

Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.3 Human Health and Performance
    - TX06.3.4 Contact-less / Wearable Human Health and Performance Monitoring